

Microchip**Filter specification****TFS 817****1/5****Measurement condition**

Ambient temperature:	23	°C
Input power level:	0	dBm
Terminating impedance: *		
Input:	357 Ω	-2,5 pF
Output:	231 Ω	-3,2 pF

Characteristics

Remark:

The reference level for the relative attenuation a_{rel} of TFS 817 is the minimum of the pass band attenuation a_{min} . This value is defined as the insertion loss a_e . The centre frequency f_c is the arithmetic mean value of the upper and lower frequencies at the 1 dB filter attenuation level relative to the insertion loss a_e . The given values for the relative attenuation a_{rel} and the group delay ripple have to be reached at the frequencies given below, even if the centre frequency f_c is shifted due to the temperature coefficient of frequency TC_f in the operating temperature range and due to a production tolerance for the centre frequency f_c .

D a t a		typ. value		tolerance / limit	
Insertion loss (reference level)	a_e	12,8	dB	max.	14 dB
Nominal frequency	f_N				817 MHz
Centre frequency	f_c	817	MHz		
Passband	PB	-		$f_N \pm$	53 MHz
Pass band ripple		0,6	dB	max.	1 dB
Amplitude ripple within any 150 kHz in PB		0,2	dB	max.	0,5 dB
Bandwidth	BW				
1 dB		118	MHz	min.	106 MHz
Relative attenuation	a_{rel}				
10 MHz ... 500 MHz		50	dB	min.	30 dB
500 MHz ... 715 MHz		45	dB	min.	35 dB
910 MHz ... 1150 MHz		41	dB	min.	35 dB
1150 MHz ... 3000 MHz		55	dB	min.	30 dB
3000 MHz ... 5000 MHz		65	dB	min.	15 dB
Absolute group delay within PB		115	ns		-
Group delay ripple within any 150kHz in PB		9	ns	max.	100 ns
Input return loss		11	dB	min.	8 dB
Output return loss		13	dB	min.	8 dB
Intermodulation	IP3 **	-		min.	35 dBm
Input power level		-		max.	+10 dBm
Permissible DC voltage					
Operating temperature range	OTR	-			- 35 °C ... + 85°C
Storage temperature range		-			- 40 °C ... + 85°C
Temperature coefficient of frequency	TC_f ***	-92	ppm/K		

*) The terminating impedances depend on parasitics and q-values of matching elements and the board used, and are to be understood as reference values only. Should there be additional questions do not hesitate to ask for an application note or contact our design team.

**) Two tones +5dBm, 100kHz apart

***) $\Delta f(\text{Hz}) = TC_f(\text{ppm/K}) \times (T - T_0) \times f_{T0}(\text{MHz})$

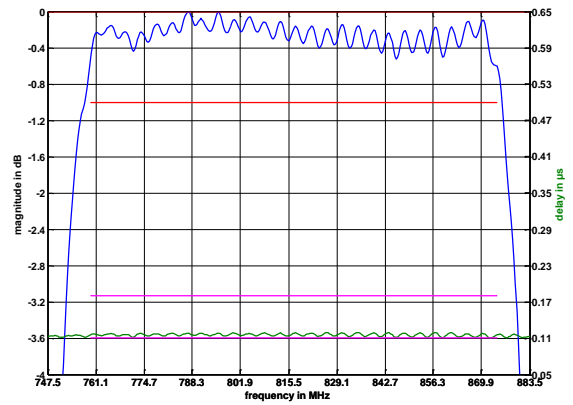
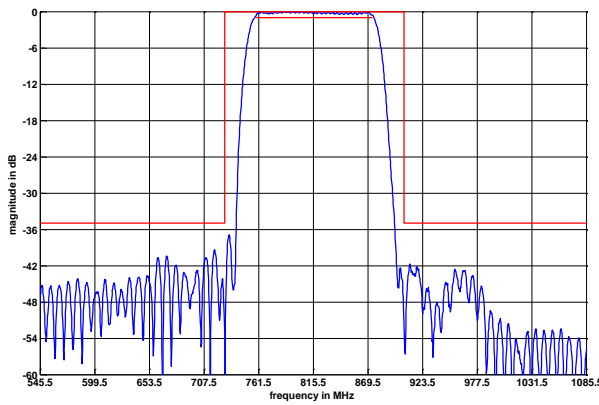
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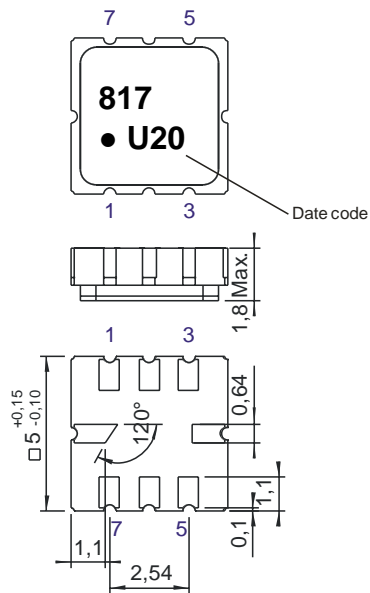
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Filter characteristic



Construction and pin connection

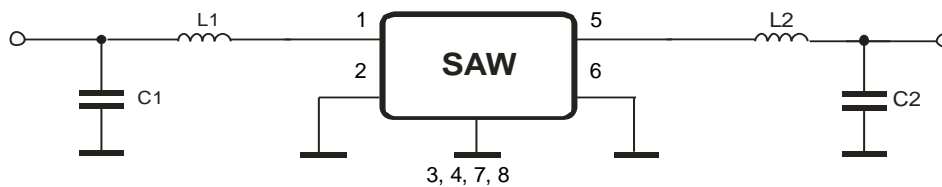
(All dimensions in mm)



- 1 Input
- 2 Input RF Return
- 3 Ground
- 4 Ground
- 5 Output
- 6 Output RF Return
- 7 Ground
- 8 Ground

Date code: Year + week
 U 2006
 V 2007
 W 2008
 ...

50 Ohm Test circuit



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Stability characteristics

After the following tests the filter shall meet the whole specification:

- 1. Shock: 500g, 1 ms, half sine wave, 3 shocks each plane;
DIN IEC 68 T2 - 27
- 2. Vibration: 10 Hz to 500 Hz, 0,35 mm or 5 g respectively, 1 octave per min, 10 cycles per plan, 3 plans;
DIN IEC 68 T2 - 6
- 3. Change of temperature: -55 °C to 125°C / 30 min. each / 10 cycles
DIN IEC 68 part 2 – 14 Test N
- 4. Resistance to solder heat (reflow): reflow possible: twice max. ;
for temperature conditions refer to the attached "Air reflow temperature conditions" on page 4;

This filter is RoHS compliant (2002/95/EG, 2005/618/EG)

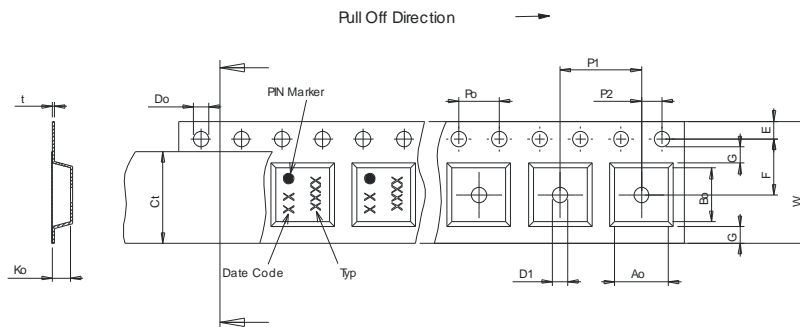
Packing

Tape & Reel: IEC 286 – 3, with exception of value for N and minimum bending radius;
tape type II, embossed carrier tape with top cover tape on the upper side;

max. pieces of filters per reel:	3000
reel of empty components at start:	min. 300 mm
reel of empty components at start including leader:	min. 500 mm
trailer:	min. 300 mm

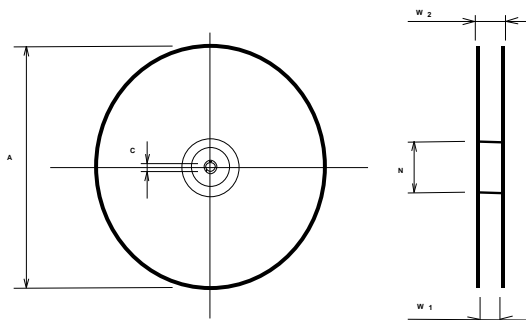
Tape (all dimensions in mm)

- W : 12,00 ± 0,3
- Po : 4,00 ± 0,1
- Do : 1,50 +0,1/-0
- E : 1,75 ± 0,1
- F : 5,50 ± 0,05
- G(min) : 0,75
- P2 : 2,00 ± 0,05
- P1 : 8,00 ± 0,1
- D1(min) : 1,50
- Ao : 5,30 ± 0,1
- Bo : 5,30 ± 0,1
- Ct : 9,5 ± 0,1



Reel (all dimensions in mm)

- A : 330
- W1 : 12,4 +2/-0
- W2(max) : 18,4
- N(min) : 50
- C : 13,0 +0,5/-0,2



The minimum bending radius is 45 mm.

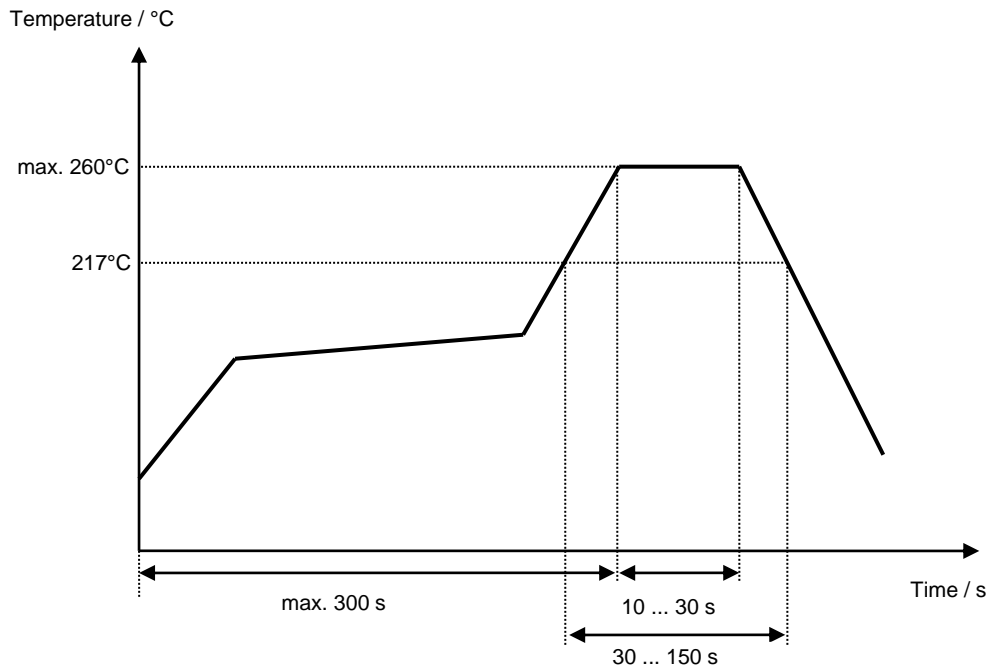
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Air reflow temperature conditions

Conditions	Exposure
Average ramp-up rate (30°C to 217°C)	less than 3°C/second
> 100°C	between 300 and 600 seconds
> 150°C	between 240 and 500 seconds
> 217°C	between 30 and 150 seconds
Peak temperature	max. 260°C
Time within 5°C of actual peak temperature	between 10 and 30 seconds
Cool-down rate (Peak to 50°C)	less than 6°C/second
Time from 30°C to Peak temperature	no greater than 300 seconds

Chip-mount air reflow profile



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Microchip**Filter specification****TFS 817****5/5****History**

Version	Reason of Changes	Name	Date
1.0	Generation of development specification	Strehl	09.05.2005
1.1	- generated filter specification - added terminating impedances - added typical values - added filter characteristic - added test circuit	Chilla	23.05.2006

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